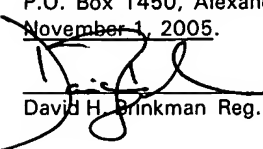




Receipt
IFW

CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on ~~November 1, 2005~~.


David H. Brinkman Reg. No. 40,532

11/1/05
Date

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s): Martin Hausner
Serial No.: 10/524,525
Filed: August 18, 2005
Group Art Unit: 1763
Confirmation No.: 1134
Examiner: Unknown
Title: **METHOD FOR SELECTIVELY REMOVING MATERIAL FROM THE SURFACE OF A SUBSTRATE, MASKING MATERIAL FOR A WAFER, AND WAFER WITH MASKING MATERIAL**
Our Ref.: BEET-09

Cincinnati, Ohio 45202

November 1, 2005

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

REQUEST FOR CORRECTED FILING RECEIPT

Errors were noted in the Filing Receipt (copy attached) issued in connection with the above-identified application. In particular, the Total Claims and Independent Claims are listed incorrectly. The Total Claims are listed incorrectly as being "23" rather than the correct number of "26". The Independent Claims are

listed incorrectly as being "2" rather than the correct number of "4". Attached is a copy of a Preliminary Amendment filed with the application on February 11, 2005 that canceled the original claims 1-23 and added new claims 24-49. Claims 24, 46, 47 and 49 are written in independent form. Consequently, the Total Claims should be "26" and the number of Independent Claims should be "4".

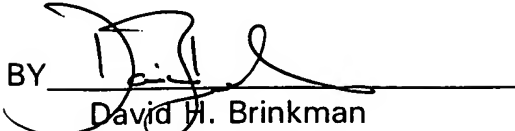
Therefore, the Filing Fee Received is listed incorrectly as being "\$1,180" rather than the correct amount of "\$1,530". A copy of the Transmittal Letter filed with the application on February 11, 2005 is attached for reference. A copy of the U.S. Department of Commerce Patent and Trademark Office Fee Record Sheet (PTO-1556) is attached which indicates that the amount of the filing fee submitted with the filing of the application was \$1,530. A copy of the check submitted with the application for the filing fee of \$1,530 is attached.

It is therefore respectfully requested that a new corrected filing receipt be issued to reflect the correct Filing Fee Received of "\$1,530," Total Claims of "26" and Independent Claims of "4".

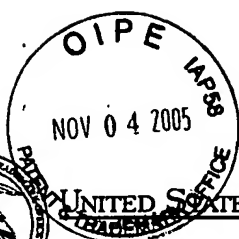
It is believed that no fees are due in connection with this correction, however, the Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. 23-3000.

Respectfully submitted,

WOOD, HERRON & EVANS, L.L.P.

BY 
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APPL NO.	FILING OR 371 (c) DATE	ART UNIT	FIL FEE REC'D	ATTY. DOCKET NO	DRAWINGS	TOT CLMS	IND CLMS
10/524,525	08/18/2005	1763	4480 1530	BEET-09	3	23 26	2 4

CONFIRMATION NO. 1134

26875
WOOD, HERRON & EVANS, LLP
2700 CAREW TOWER
441 VINE STREET
CINCINNATI, OH 45202

FILING RECEIPT



OC000000017275383

Date Mailed: 10/19/2005

Receipt is acknowledged of this regular Patent Application. It will be considered in its order and you will be notified as to the results of the examination. Be sure to provide the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION when inquiring about this application. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. If an error is noted on this Filing Receipt, please mail to the Commissioner for Patents P.O. Box 1450 Alexandria Va 22313-1450. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections (if appropriate).

Applicant(s)

Martin Hausner, Wiesbaden, GERMANY;

Power of Attorney: The patent practitioners associated with Customer Number 26875.

Domestic Priority data as claimed by applicant

This application is a 371 of PCT/EP03/09052 08/14/2003

Foreign Applications

GERMANY 102 37 249.7 08/14/2002

Projected Publication Date: 01/26/2006

Non-Publication Request: No

Early Publication Request: No

Title

Method for selectively removing material from the surface of a substrate, masking material for a wafer, and wafer with masking material

Preliminary Class

216

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

Since the rights granted by a U.S. patent extend only throughout the territory of the United States and have no effect in a foreign country, an inventor who wishes patent protection in another country must apply for a patent in a specific country or in regional patent offices. Applicants may wish to consider the filing of an international application under the Patent Cooperation Treaty (PCT). An international (PCT) application generally has the same effect as a regular national patent application in each PCT-member country. The PCT process **simplifies** the filing of patent applications on the same invention in member countries, but **does not result** in a grant of "an international patent" and does not eliminate the need of applicants to file additional documents and fees in countries where patent protection is desired.

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Express Mail No. EV425514585US

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s): Martin Hausner
Serial No.: Unknown (National Phase of International Application
PCT/EP03/09052)
Filed: February 11, 2005 (Priority Date Claimed August 14, 2002)
Art Unit: Unknown
Confirmation No.: Unknown
Examiner: Unknown
Title: **METHOD FOR SELECTIVELY REMOVING MATERIAL FROM THE
SURFACE OF A SUBSTRATE, MASKING MATERIAL FOR A
WAFER, AND WAFER WITH MASKING MATERIAL**
Our Ref. No.: BEET-09

Cincinnati, OH

February 11, 2005

Mail Stop PCT
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

PRELIMINARY AMENDMENT

Sir:

Prior to examination of the above-identified application, please amend
the application as follows:

Amendments to the Claims are reflected in the listing of claims which begins on
page 2 of this paper.

Remarks/Arguments begin on page 10 of this paper.

This listing of claims will replace all prior versions, and listings, of claims in the application:

In the Claims:

1-23. Canceled.

24. (NEW) A method for the selective removal of material from the surface of a silicon-containing substrate for forming a deepening, comprising the steps of:

applying a mask onto the substrate surface in accordance with the desired selective removal, aluminium being used for forming the mask,

dry-etching the substrate, and

inductively coupling power into the etching medium during dry etching,

characterized in that

a cavity of a depth of at least 150 μm is generated at an etch rate of at least 2 $\mu\text{m}/\text{min}$,

in turn with etching steps passivation steps are included, and

the substrate is kept at a distance from the inductive coupling of at least two times, preferably at least three times, the mean free path length of the plasma atoms, or at a distance of at least 8 cm from the inductive coupling.

25. (NEW) The method according to claim 24, characterized in that the substrate is kept at a distance of at least 10 cm from the inductive coupling.

26. (NEW) The method according to claim 24, characterized in that during etching the pressure is below 15 Pa, preferably below 10 Pa, and/or above 1 Pa, preferably above 2 Pa.

27. (NEW) The method according to claim 24, characterized in that material is removed up to the other side of the substrate.

28. (NEW) The method according to claim 24, characterized in that a mask having a thickness of below 1.5 μm , preferably below 0.6 μm , is formed.

29. (NEW) The method according claim 24, characterized in that the substrate is masked up to the edge.

30. (NEW) The method according to claim 24, characterized in that when the mask is applied aluminum is vapor-deposited or sputtered.

31. (NEW) The method according to claim 24, characterized in that when the mask is applied a metallic layer is etched in accordance with the desired selective removal.

32. (NEW) The method according to claim 24, characterized in that the metal used contains at least 90% by weight Al.

33. (NEW) The method according to claim 24, characterized in that the etch position (T) is determined repeatedly in the depthwise direction, etching being concluded or a second etching process, which is qualitatively different or proceeds with operating parameters differing from those of the preceding etching process, being employed when a certain position has been reached.

34. (NEW) The method according to claim 33, characterized in that the depth is determined by means of laser light whose properties are analyzed after being reflected by the bottom, in particular with respect to the first derivative of a detected signal.

35. (NEW) The method according to claim 33, characterized in that in the second etching process etching is carried out in a dry condition with inductively power-coupled plasma, the gas pressure being higher and/or the applied bias being lower.

36. (NEW) The method according to claim 34, characterized in that in the second etching process etching is carried out in a dry condition with inductively power-coupled plasma, the gas pressure being higher and/or the applied bias being lower.

37. (NEW) The method according to claim 33, characterized in that after the second etching process a third etching process is applied which is qualitatively different from the preceding etching process or proceeds with operating parameters differing from those of the preceding etching process.

38. (NEW) The method according to claim 34, characterized in that after the second etching process a third etching process is applied which is qualitatively different from the preceding etching process or proceeds with operating parameters differing from those of the preceding etching process.

39. (NEW) The method according to claim 35, characterized in that after the second etching process a third etching process is applied which is qualitatively different from the preceding etching process or proceeds with operating parameters differing from those of the preceding etching process.

40. (NEW) The method according to claim 37, characterized in that in the third etching process etching is carried out in a dry and isotropic condition and preferably with inductively power-coupled plasma, wherein the applied bias may be 0.

41. (NEW) The method according to claim 24, characterized in that before the mask is removed an incineration step for polymer residues on the mask is preferably provided by wet etching.

42. (NEW) The method according to claim 41, characterized in that the incineration is effected by means of oxygen plasma.

43. (NEW) The method according to claim 41, characterized in that the incineration is followed by a treatment with tetramethylammonium hydroxide.

44. (NEW) The method according to claim 42, characterized in that the incineration is followed by a treatment with tetramethylammonium hydroxide.

45. (NEW) The method according to claim 24, characterized by one or more of the following features:

the material is removed from more than 8%, preferably more than 20%, of the substrate surface,

the substrate is a disk-like wafer having a diameter of at least 10 cm, preferably at least 15 cm.

46. (NEW) Use of aluminum or an aluminum alloy having at least 90% by weight Al or of a composite material having at least 90% by weight Al as a masking material for substrates which are to be etched in a dry condition using inductively power-coupled plasma up to a depth of at least 300 μm at an etch rate of at least 2 $\mu\text{m}/\text{min}$, wherein the substrate is kept at a distance from the inductive coupling of at least two times, preferably at least three times, the mean free path length of the plasma atoms, or at a distance of at least 8 cm from the inductive coupling, and wherein in turn with etching steps passivation steps are included.

47. (NEW) A mask material for masking wafers to be etched, the material containing aluminum,

characterized in that

the aluminum amount is more than 90% by weight, preferably more than 95% by weight, and

a copper amount between 0.5 and 2% by weight, preferably below 1% by weight, and/or a silicon amount between 0.5 and 2% by weight and/or a titanium amount between 0.2% by weight and 3% by weight, preferably below 1.5% by weight, are admixed.

48. (NEW) Wafer having a masking layer with a masking material according to claim 47.

49. (NEW) A method for the selective removal of material from the surface of a silicon-containing substrate for forming a deepening, comprising the steps of:

applying a mask onto the substrate surface in accordance with the desired selective removal, aluminium being used for forming the mask,

dry-etching the substrate, and

inductively coupling power into the etching medium during dry etching, characterized in that

a cavity which fully penetrates through the substrate is generated at an etch rate of $2\text{ }\mu\text{m/min}$,

in turn with etching steps passivation steps are included, and

the substrate is kept at a distance from the inductive coupling of at least two times, preferably at least three times, the mean free path length of the plasma atoms, or at a distance of at least 8 cm from the inductive coupling, an electric field is applied between the substrate and the inductive coupling.

REMARKS

Claims 1-23 have been canceled without prejudice or disclaimer and new claims 24-49 have been added.

If any additional fees are necessary to complete this communication, the Commissioner is hereby authorized to charge same to Deposit Account No. 23-3000.

Respectfully submitted,

WOOD, HERRON & EVANS, L.L.P.

By 

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